

We claim:

1. A method of treating a substantially coagulated masterbatch comprising a particulate filler and an elastomer, the method comprising the steps of:
- feeding the masterbatch to a feed port of a continuous compounder having multiple  
5 rotors axially oriented in an elongate processing chamber;
- processing the masterbatch through the processing chamber of the continuous compounder by controlled operation of the rotors; and
- discharging the masterbatch from a discharge orifice of the continuous compounder.
- 10 2. The method of claim 1, further comprising the step of passing the masterbatch from the discharge orifice of the continuous compounder through an open mill.
3. The method of claim 2, further comprising the steps of passing the masterbatch from the open mill through a cooling system having a water spray, passing the masterbatch from the cooling system through a granulator, and passing the masterbatch from the  
15 granulator through a baler.
4. The method of claim 1, further comprising the step of compounding additional material into the masterbatch in the continuous compounder.
5. The method of claim 4, wherein the additional material is selected from additional filler, additional elastomer, a second masterbatch, oil and other additives.
- 20 6. The method of claim 1, wherein the continuous compounder dries the masterbatch.
7. The method of claim 1, wherein the continuous compounder controls the Mooney Viscosity of the masterbatch.

8. A continuous flow method of producing elastomer composite, comprising:  
 feeding a continuous flow of first fluid comprising elastomer latex to a mixing zone  
 of a coagulum reactor defining an elongate coagulum zone extending from the mixing zone  
 to a discharge end;

5 feeding a continuous flow of second fluid comprising particulate filler under  
 pressure to the mixing zone of the coagulum reactor to form a mixture with the elastomer  
 latex, the mixture passing as a continuous flow to the discharge end and the particulate  
 filler being effective to coagulate the elastomer latex, wherein mixing of the first fluid and  
 the second fluid within the mixing zone is sufficiently energetic to substantially completely  
 10 coagulate the elastomer latex with the particulate filler prior to the discharge end;

discharging a substantially continuous flow of elastomer composite from the  
 discharge end of the coagulum reactor;

feeding the substantially continuous flow of elastomer composite to a feed port of  
 a continuous compounder having multiple parallel rotors axially oriented in an elongate  
 15 processing chamber;

processing the elastomer composite through the processing chamber of the  
 continuous compounder by controlled operation of the rotors; and

discharging the elastomer composite from a discharge orifice of the continuous  
 compounder.

20 9. The method of claim 8, further comprising the step of processing the elastomer  
 composite from the discharge orifice of the continuous compounder through an open mill.

10. The method of claim 9, further comprising the steps of passing the masterbatch  
 from the open mill through a cooling system having a water spray, passing the masterbatch  
 from the cooling system through a granulator, and passing the masterbatch from the  
 25 granulator through a baler.

11. Apparatus for producing elastomer composite of particulate filler dispersed in  
 elastomer, comprising:

a coagulum reactor defining a mixing zone and an elongate coagulum zone  
 extending from the mixing zone to a discharge end;

latex feed means for feeding elastomer latex fluid continuously to the mixing zone;

filler feed means for feeding particulate filler fluid as a continuous jet into the mixing zone to form a mixture with the elastomer latex fluid traveling from the mixing zone to the discharge end of the coagulum zone, wherein the distance between the mixing zone and the discharge end is sufficient to permit substantially complete coagulation of the elastomer latex prior to the discharge end; and

a continuous compounder having a feed port operatively connected to the discharge end of the coagulum zone for receiving the coagulated mixture of elastomer latex and particulate filler, a discharge orifice, an elongate processing chamber, and a plurality of rotors axially oriented within the processing chamber.

12. The apparatus of claim 11, further comprising conveying means for conveying a substantially continuous flow of elastomer composite from the discharge end of the coagulum zone to the feed port of the continuous compounder.

13. The apparatus of claim 11, further comprising:  
 an open mill connected by a conveyor to the discharge orifice of the continuous compounder;  
 a cooling system having a water spray and connected by a conveyor to the open mill;  
 a granulator connected by a conveyor to the cooling system; and  
 a baler connected by a conveyor to the granulator.

14. An elastomer composite comprising substantially coagulated elastomer in which particulate filler has been dispersed by:  
 feeding a continuous flow of first fluid comprising elastomer latex to a mixing zone of a coagulum reactor defining an elongate coagulum zone extending from the mixing zone to a discharge end;  
 feeding a continuous flow of second fluid comprising particulate filler under pressure to the mixing zone of the coagulum reactor to form a mixture with the elastomer latex, the mixture passing as a continuous flow to the discharge end, and the particulate filler being effective to coagulate the elastomer latex, wherein mixing of the first fluid and

the second fluid within the mixing zone is sufficiently energetic to substantially completely coagulate the elastomer latex with the particulate filler prior to the discharge end;

discharging a substantially continuous flow of elastomer composite from the discharge end of the coagulum reactor;

5 feeding the elastomer composite from the discharge end of the coagulum reactor to a continuous compounder having multiple parallel elongate rotors axially oriented in an elongate processing chamber;

processing the masterbatch through the processing chamber of the continuous compounder by controlled operation of the rotors; and

10 discharging the masterbatch from a discharge orifice of the continuous compounder.

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